

Prevalence and associated risk factors of hypertension among adults in Rajasthan, India

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Abstract

Background: Hypertension is a major public health problem among India. It is an important area of research due to its high prevalence and being a major risk factor for cardiovascular diseases and other complications.

Objectives: To find out the prevalence of hypertension and its associated risk factors among people living in the study area.

Material & Methods: It is a cross-sectional study conducted in the department of medicine, Dungarpur medical college, Rajasthan, India. Participants more than 18 years of age, both gender attending medicine OPD or IPD were enrolled in the study. A detailed history, family history of hypertension, clinical examination, blood pressure measurement and all relevant investigations were done.

Results: The prevalence of hypertension among study participants was 25.3%. Prevalence of hypertension was found more in male subjects as compared to female subjects. The risk factors found to be significantly associated with HTN in this study were increasing age, male gender, family history of hypertension, obesity (high BMI), diabetes, smoking, alcohol, sedentary lifestyle and hyperlipidemia.

Conclusion: There is a significant association of hypertension was found in obesity, smoking, alcohol consumption, physical inactivity, stress and diabetes mellitus. Strong public health measures need to be seriously implemented to combat hypertension and its consequences.

Keywords: Prevalence, hypertension, risk factors, obesity, diabetes

Introduction

Hypertension is one of the major public health problems around the globe and its prevalence is rapidly increasing among developing countries ^[1]. According to standard guidelines hypertension is defined as systolic Blood pressure (BP) ≥ 140 mmHg and/or diastolic BP ≥ 90 mmHg. The grey area falling between 120-139 mmHg systolic BP and 80-89 mmHg diastolic BP is defined as "prehypertension" ^[2-3]. Hypertension is a major risk factor for chronic heart disease, stroke, and coronary heart disease. Elevated BP is positively correlated

to the risk of stroke and coronary heart disease. Other complications include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage, and visual impairment [4]. According to the WHO NCD country profile (2021), the prevalence of raised blood pressure among Indian adults aged 18+ was 24%. It was almost the same in both the sexes, with 24% men and 23% women having hypertension [5].

Modifiable risk factors for hypertension are stress, tobacco use, unhealthy diet, physical inactivity, high alcohol consumption, obesity, hyperglycemia and hyperlipidemia. Non-modifiable risk factors are family history of hypertension, age above 65 years, and coexisting comorbid conditions [6-7].

In low- and middle-income countries, many people with hypertension are not aware of their disease and the necessity for regular blood pressure checks. People may simply be unaware of the health consequences or indifferent to the risks of untreated hypertension [8].

Low healthcare literacy, poor patient self-care, high self-medication rate, inconsistent hypertension management guidelines, and non-adherence to treatment plans and medical regimens leads to poor blood pressure control and high healthcare costs, thus intensifying the problem in India [9].

Hypertension is easily diagnosable and controllable with effective medicines. Unfavorable health outcomes associated with hypertension could be lessened through strategies that include early identification, treatment, and control by providing timely access to primary healthcare providers to expedite the process to alleviate the expense of medications for those in treatment through insurance coverage, cost-sharing, and benefit designs, and finally to support hypertension control by expanding worksite wellbeing and quality control measures [10].

Hypertension remains a challenge in various portions of the world after lots of programs for the prevention of hypertension. Observing at the prevailing load of hypertension, the Government of India has launched many programs for the prevention and control of diabetes, cancer, and cardiovascular diseases control of disease at the community level [11].

Thereby the present study was conducted to find out the prevalence of hypertension and to identify the risk factors in Rajasthan, India.

Materials and Methods

This cross sectional study was carried out in the Department of Medicine, government medical college, Dungarpur, Rajasthan, India. The study was conducted from December 2020 to November 2021 (01 year period). All patients attending medicine OPD during the study period were enrolled in our study. Inclusion criteria were all adults ≥ 18 years of age, provide consent to the study, while excluded were subjects <18 years of age, pregnant women, and people who not give consent.

A thorough demographic detail was collected from all the patients and complete physical and medical examination was done on all of them. A history of hypertension in the family was also enquired and noted.

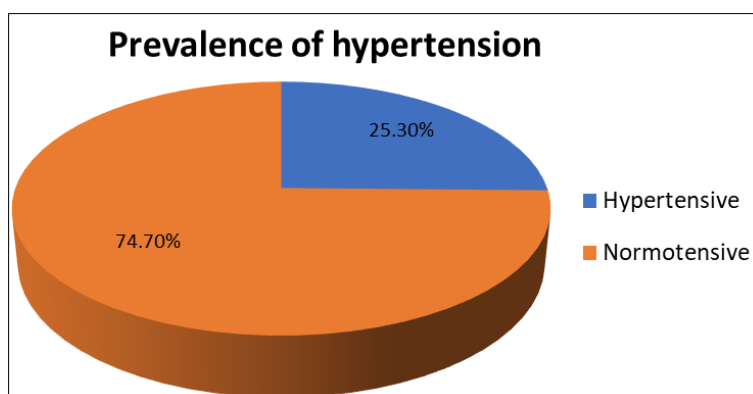
Body mass index was calculated based on the height and weight of the patient

The blood pressure was collected twice from all the patients, while they were in the sitting position, with a 10 minute gap. An average of the two was taken and was considered to be the blood pressure of the patient. A full blood workup was done for all of them, such as complete blood picture, Hemoglobin estimation, Erythrocyte sedimentation rate, blood glucose test, biochemical tests for Urea and creatinine and lipid levels

The results were analyzed using Microsoft Excel in the form of graphs and tables. All p-values less than 0.05 were considered statistically significant

Results

A total of 1560 suspected patients were enrolled in our study. The prevalence of hypertension was found 395 (25.3%).



In the present study prevalence of hypertension was slightly higher in male population. Age wise prevalence of hypertension showed that the highest prevalence was seen in the age group between 41- 50 years, followed by 31-40 years of age. Among socio-economic status, highest prevalence of hypertension was found in middle socio-economic group [Table 1].

Table 1: Socio demographic Characteristics of the Study Subjects and hypertensive subjects

Socio demographic variables		Study subjects (N=1560)	Hypertensive subjects (N=395)	P- value
Age (in years)	18-30	292	66	0.82
	31-40	308	83	
	41-50	343	94	
	51-60	319	79	
	>60 years	298	73	
Gender	Male	812	213	0.505
	Female	748	182	
Residential status	Urban	1428	344	0.006
	Rural	132	51	
Education	Illiterate	188	79	0.0004
	Literate	1372	316	
Socio-economic status	Low	601	145	0.008
	Middle	532	165	
	High	427	85	

Study also revealed that the prevalence of hypertension was high in the smoking and alcohol habits participants. Family history of hypertension was significantly associated with the hypertension. It was also noted that prevalence of hypertension was higher in the participants with sedentary life style. Detailed statistical analysis for association of hypertension with risk factors is presented in Table 2.

Table 2: Prevalence of associated risk factors in hypertensive subjects and study subjects

Associated risk factors		Study subjects (N=1560)	Hypertensive subjects (N=395)	P-value
Body Max Index (Kg/M ²)	Normal (<25)	515	156	0.001
	Over weight (25-30)	585	124	
	Obese (31-40)	380	81	
	> 40 (morbid obesity)	80	34	
Smoking habit	Yes	285	117	<0.001

	No	1275	278	
Alcohol consumption	Yes	314	103	0.009
	No	1246	292	
Types of diet	Vegetarian	924	265	0.004
	Non vegetarian	636	130	
Family history of hypertension	Yes	107	89	<0.001
	No	1453	306	
Physical activity	Mild	626	190	0.0008
	Moderate	549	140	
	Vigorous	385	65	

Diabetes mellitus, raised cholesterol level, raised triglyceride level, cardiovascular diseases and COPD was significantly associated with the hypertension [Table: 4]

Table 3: Prevalence of associated Diseases in hypertensive subjects and study subjects

Associated diseases		Study subjects (N=1560)	Hypertensive subjects (N=395)	P- value
Diabetes mellitus	Yes	435	209	<0.0001
	No	1125	186	
Hypertriglyceremia	Yes	390	183	<0.0001
	No	1170	212	
hypercholesterolemia	Yes	405	198	<0.0001
	No	1155	197	
CVD	Yes	167	89	<0.0001
	No	1393	306	
COPD	Yes	135	78	<0.0001
	No	1425	317	

Discussion

Prevalence of hypertension was found 25.3% in current study, similar to the other studies, like Geevar, et al [12], Asemu et al [13] and Singh S et al [14], reported hypertension prevalence were 26%, 29.2% and 32.5% respectively, whereas quite lower prevalence was reported by J. S. Tabrizi et al [15] and Prabakaran et al [16], in contrast to that quite higher prevalence (54.7%) was reported by M Saka et al [17].

Present study was observed that most of the hypertensive participants belong to 41-60 years age group, comparable with the other studies, M MKurjogi et al [18].

In our study persons in the urban location had a significantly higher prevalence than persons in rural location, concordance finding also reported by Ghosh S et al [19].

Family history of hypertension was significantly associated with the hypertensive subjects, accordance to the Mahapatra R, et al [20].

Prevalence of hypertension was lower among persons who did regular vigorous intensity exercise versus those who did moderate intensity exercise, concordance with the M D Saju et al [21].

There existed a significant ($p < 0.05$) association of hypertension with educational status, socioeconomic class, tobacco / alcohol consumption, over weight and nutritional status, our finding was comparable with the Vigna et al [22].

In our study hypertension was significantly associated with the, physical inactivity, obesity, vegetable intake and family history of hypertension, similar finding also reported by Agrawal N et al [23], whereas Ahmed A et al [24] found no significant association between increasing systolic pressure with smoking habit, physical activity and vegetable intake and family history.

A significantly higher proportion of hypertension was found in the illiterate category, correlate with the Mahmood SE et al [25].

Present study was observed significant association between the hypertension with the

diabetes, dyslipidemia and atherosclerosis, concordance with the Mohanraj S, et al [26]. In our study 60.5% hypertensive participants was obese, accordance to the Babu, et al [27]. Prevalence of hypertension was marginally higher in male as compared to female in current study; similar finding also reported by Manandhar K et al [28] and Thapliyal et al [29].

Conclusion

Higher prevalence of hypertension was found in the study population. Significant association was found between hypertension with family history, smoking habit, physical inactivity, obesity, CVD, DM, and COPD. therefore, it is necessary to perform regular periodical health check-up specially including blood pressure monitoring should be suggested to all the people of age more than 20 years. In addition .screening and identifying hazardous factors, promoting self-care behaviors and management, and controlling HTN.

Conflicts of interest: None

Source of funding: None

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